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RESEARCH ON PROFITABILITY OF FISH FARMING IN 1984

BY

THE FISHERY DIRECTORATE

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P R E F A C E

This is a presentation by the Fishery Directorate of the results from its research into the profitability of fish farming in 1984. 1982 was the first year that research of this kind was undertaken and the presentation of 1984 is based on the same concepts as in 1982 and 1983.

Consultant Trond Tepstad was in charge of conducting the research of 1984.

Bergen, October 1986

Hallstein Rasmussen

Gunnar Nybø

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THE PROFITABILITY OF NORWEGIAN FISHFARMS IN 1984

This publication presents the results of an economic research on salmon and trout farming in Norway in 1984. A similar research was undertaken in 1982 and 1983. The methods and presentation of the figures are much the same as in 1982 and 1983.

The results are based on information from 97 plants, representing about 24% of the operating commercial Norwegian food fishfarms. Plants with volume less than 500 m^3 are excluded. The major part of the plants in the sample consists of sea water fish-farms with floating net cages. 78 of the 97 plants in 1984 were also included in the 1983-sample.

The average number of man/year per farm was 3.34. One man/year is defined as 1975 workinghours, the same definition which is used in official costs and earnings studies in the Norwegian agriculture sector. There was a variation between 1.6 man/year in average for the farms with volume less than 3,000 m^3, and 5 man/year for the farms with volume exceeding 7,000 m^3.

The return on total invested capital decreased from 17.1% in 1983 to 13.4% in 1984 as an average based on all plants. If the owners own work on their plants is not calculated as a cost, the return on total invested capital in average was 21.6% in 1984

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compared with 24.5% in 1983.

The wage paying ability per man/year averaged nok 246,231 in 1984. In 1983 the wage paying ability per man/year was nok 199,116. Wage paying ability is defined as total income minus costs ex. paid and calculated labour costs but included calculated equity costs.

14 plants had a negative wage paying ability in 1984, and for 4 others the wage paying ability varied between 0 and nok 50,000. More than 50% of the farms in the 1984-sample obtained a wage paying ability per man/year exceeding nok 200,000.

The farms with a volume between 7,000 m^3 and 14.999 m^3 had the higest average wage paying ability per man/year in 1984. This was also the case in 1983 and 1982. But there were very few plants with more than 15.000 m^3 included in the survey.

The total sale of Norwegian aquaculture salmon and trout increased by 12% from 1983 to 1984.

The average production per man/year did not change much from 1983 til 1984. (26 tons). The highest production per man/year was achieved by the farms with volume exceeding 7,000 m^3 (30 tons).

The fish production per cubic meter averaged 16.8 kilos in 1984 (16.1 kilos in 1983). This varied from an average of 15.6 kilos

for the farms with volume less than 3,000 m^3 to 18.48 kilos for the farms with volume between 5,000 m^3 and 6,999 m^3.

Average cost per kilo produced fish was in 1984 nok 31.17 for the country as whole. More than 50% of total cost per kilo produced fish was feeding costs and smolt costs.

1. INTRODUCTION (4)

Since 1982 the Fishery Directorate has undertaken a study of the profitability of fish farming (food fish plants). Authorization for obtaining the necessary basic data was given in the statute of May 10th, 1981 concerning the building of farms for the hatching of roe and for the farming of fish and shellfish. On the 14th of July 1985 this statute was replaced by a statute on the farming of fish and shellfish etc.

Since 1976 the Fishery Directorate has also carried out the collection and revision of data concerning fish farming statistics which the Central Bureau of Statistics issues each year. A considerable part of the data used in this profitability study is obtained through the fish farming statistics. Other data for the study are obtained from the fish farmers. This data collection is primarily based on a special profitability questionnaire and on the annual financial statements for the individual farm.

This report represents the profitability results for 1984. 143 fish farms were approached in June 1985, by mail, and asked to produce financial and other data for 1984. For various reasons, the lack of response has been substantial. There were many fish farmers who did not answer the request from the Fishery Directorate at all. It also became apparent that among the rest of the farmers contacted, there were a number who were engaged in activities besides fish farming. For many of those it was impossible to sort out the fish farming results from their books and therefore they had to be discarded. This was especially unfortunate because many farms (5)

in this category were large. The most important reason for the poor response was that the information sent in from the farms could not be used in the study. The use of poor and incomplete data would have weakened the quality of the study if these farms had been included.

The final result was that the study includes 97 farms. This is about 24% of all farms that had sold farmed salmon and trout in 1984. In 1983, 32% of all farms took part. 24% of the total is less than one could wish for. This low representation creates a problem that gets worse the more the farms are divided into groups and sub-groups. For some of the groups the limited numbers create uncertainty to a considerable degree, to the expense of the creditability of the report. Weak representation has, for instance, led to the necessity to combine the two groups with the biggest used concession volume in the previous years research, into a group including all farms over 7.000 m^3. This was necessary because the previous group of farms over 15.000 $,^3$ would only consist of two farms in 1984. This was unfortunate considering the desire to obtain a better review of the profitability of the largest farms.

The presentation of the profitability study in 1984 is the same as that for 1982. A change in the 1983 study was made. It concerned the turnover value of the fixed assets that were written off but still in use and included in the total turn over value. That was changed to the procedure used in the 1982 research. (6)

The presentation itself is little changed compared with 1982 and 1983. Some new tables are added, some tables are deleted, and some included in 1983 have undergone minor changes. The most important change is that the table showing operational results distributed by size and geography is not included in the 1984 report. The reason for that is that a large part of the groups so divided, would be so small that they would provide little explanation. Instead, the results are now presented in a table where farms are distributed according to size and a table where the farms are distributed according to geographical location. In addition two new tables are presented showing production cost per kg and distribution of cost by percentage per kg. In this case the farms in one table are distributed according to size and in the other according to the geographical location.

As in the two preceding years, the 1984 research is a selective one, built on 97 of 400 farms engaged in food fish production and having sales in 1984. Farms with a capacity under 500 m^3 are not included. With combined stock fish and food fish farms, attempts have been made to exclude income and expenses belonging to the production of fish for stocking. The same goes for farms engaged in activities besides fish farming.

The profitability study concerns, as previously mentioned, only farming of fish for food. (7)

The selection is based on a random sample within the 17 defined groups (3-5 sizes of groups within four geographical regions). Nevertheless, attempts were made to keep as many of the farms also selected in 1983 as possible (and also possibly in 1982).

Of the 97 that were part of the 1984 selection, 78 also participated in 1983. The drop-out percentage is thus much larger among the newly selected farms than among farms which took part in the previous research.

The results are presented in a separate table set-up (Chapter 3) which includes 8 tables.

In Chapter 2 some of the results will be elaborated upon.

In Chapter 4 the different profitability and other measures used in the study are defined.

Enclosure A contains a discussion of the advantages of operating on a large scale.
Enclosure B contains the 1984 Profitability Questionnaire for Fish Farming and Fish Farming 1984 (statistical study).

2. RESULTS. (8)

As mentioned in the introduction the results are presented separately (Chapter 3). In this chapter some of the figures will be discussed in depth. The uncertainty which is imbedded in the material will once more be pointed out. In spite of the weaknesses and the uncertainty surrounding the report, we have found it responsible to publish the results. We are of the opinion that, in particular, the average figures for the whole country give a useful picture of the level of individual results. The more the material is divided

in groups and sub-groups, the less explanatory power and certainty it has.

2.1. Profitability considerations

There is one thing typical of the fish farming industry that has become apparent in all profitability studies which the Fishery Directorate has undertaken. That is the great spread of the operating profit. The natural explanation for this is the uncertainty which is apparent in the fish farming industry. The farms operate in a natural environment which cannot be completely controlled. Incidents over recent years have shown that there is a long way to go before one has full knowledge of this environment. Disease, bad weather, damage by different organisms are keywords which can explain how good results over a very short period of time can become negative ones. When reading the tables it is necessary to keep in mind that there is a very large variation in the material. However, two tables have been worked out (9) (Tables 3 and 6) earning capacity per person year for all farms included in the study, distributed according to size and geographical criteria. The same table also shows averages, empirical standard deviations, and relative empirical standard deviations for this capacity and for the same groups.

We now comment on the individual measures of profitability. These profitability studies have always used earning capacity per person year as the most central measure of profitability. The reason for this has primarily been the desire to compare fish farming with profitability in the traditional fishing industry. Earning cap. per person year is the central figure used during negotiations for subsidies to

the fishing industry. However, one can argue whether earning capacity per person year is the most relevent measure of profitability in an independent industry like fish farming. Many would prefer the use of a measure of profitability which is more suited for comparison with other industries. In order to accommodate these wishes we also present average total profitability. However, this figure is not directly comparable with other industries. We will comment further on this later in the presentation. If, on the other hand, those assumptions that the calculation of this figure is based on, are taken into consideration, the figure should also be informative when compared to that for other industries.

As shown in Table 1 and Table 4, the average earning capacity per person year was kr 246,231 in 1984. This is an increase of kr 47.115 from 1983. (10) Without fixed farm selections, there will always be a risk of changes in the average size originating from differences in the combinations of selections. It is impossible to calculate the effect of this completely. Based on the fact that 80% of the farms selected in 1984 also took part in 1983, and that the increase in earning capacity per person year recurs in 3 of the 4 sub-groups, it seems reasonable to conclude that this capacity has increased in the industry. The level of the increase is more uncertain.

Looking at the individual groups, the large increase in earning capacity per person/year which the group over 7.000 m^3 has from 1983 to 1984 is apparent. One explanation could be that in 1984 fewer farms over 15.000 m^3 took part than in 1983. One of the conclusions in the two previous studies was that earning capacity per person year was considerably lower in farms over 15.000 m^3 than in the group

7.000 m^3 - 15.000 m^3.

It can also be noticed that profitability in the group between 5.000 and 6.999 m^3 has decreased from 1983 to 1984. Furthermore, one can see that this group has a lower earning capacity per person year than the group between 3.000 and 4.999 m^3. Here one must take into consideration that in these two groups , there were fewer farms participating in 1984 than in 1983. It is easy to believe that random variations in the selection can have played a major role in the development of the profitability results. One can, therefore, hardly conclude that the position of the group between 5.000 and 6.999 m^3 has weakened and that it was less profitable than the group 3.000 to 4.999 m^3 in 1984. Table 4 shows how the (11) earning cap. per p.yr. varies between the different geographical regions. Sogn and Fjordane/Hordaland clearly distinguish themselves with the best average results, while the Rogaland/ Skagerrak Coast distinguishes itself with the weakest results. However, it must be noticed that the combination of sizes is also of importance for the geographical differences. Tables 7 and 8 show the distribution of farms as to size and geography. It is noteworthy that in both groups that scored highest (Hordaland/Sogn and Fjordane, and Trøndelag/Møre and Romsdal), over 50% of the selection represented farms over 5.000 m^3. Concerning Nordland/ Troms/Finnmark, it should be noted that his group includes only 3 farms of 20 which are not located in Norland county.

One of the purposes of the calculation of earning capacity per person year is, as mentioned earlier, the possibility of comparing the profitability of fish farming with the profitability of the traditional fisheries.

Although the principles of calculation are not identical, it will nevertheless give a good base for claiming that fish farming in 1984 had considerably higher earning capacity per person year than traditional fishing. For traditional fishing, earning capacity per/year person for all boats 13 m l.l. and over, operating year round, was on an average kr. 101.426. This can be compared with the fish farming industry's kr 281.684. These figures are arrived at by dividing the average profitability by the average earning capac. per/year person. For the fishing (12) fleet of 13 m l.l. and over, as a whole, 1984 was a medium good year.

The main conclusion that can be drawn from the Tables is that fish farming, on the basis of earning capacity per person year, is a profitable industry, and that the profitability, in accordance with this criterion, increased from 1983 to 1984 for the country as a whole. Based on this and previous studies, it seems that earning capacity per p-yr is highest in the group over 7.000 m^3 and lowest in the group under 3.000 m^3. From a geographical point of view, Hordaland and Sogn and Fjordane distinguish themselves as having the best results, while Rogaland and the coast of Skagerrak have the lowest earning capac. per/year person. Major variations in earning capac. per/year person within the same group size or within the same geographical region (see Tables 3 and 6) also point in the direction that criteria other than size and geographical location can be just as important to earning capac. per/year person. Human factors, for instance, can be of importance for operation and management. A good location for the farm is another important factor.

Total income minus costs must also be commented upon (Column 19 in Tables 1 and 4). Costs also include imputed salary for the owner and imputed interest of owner's capital. To the extent these items are realistically estimated, column 19 will merely express the average "clear profit" which exists on the fish farms. The existence of such a "clear profit" underlines that profitability in this industry is good. The reason the existence of a "clear profit" can, for instance, be that the concession system prevents free establishment. (13) Other reasons can be the differences in the production ability of the localities. This is especially true for the larger farms and geographically for the region Trøndelag-Hordaland.

As in previous studies, we show for 1984 total profitability I (Column 30) and total profitability II (Column 31). One should notice that the definition causes the numbers in these columns not to be completely comparable to corresponding numbers for other industries (see Chapter 4). Total profit is an expression for return from total capital. The difference between I and II is that in profit II, the costs are increased by the imputed owner's salary.

A decrease in total profit has taken place from 1983 to 1984. The decrease includes both total profit I and II. It can also be seen that the difference between I and II decreases with increased size of the farms. This is, of course, related to the fact that the unpaid labour by owner and family is greater on the small farms. It can also be noted that the total profit increases slightly with the size of the farms. From a geographical point of

view, the farms in Hordaland and Sogn and Fjordane have the highest profit II, while the farms in Rogaland and on the coast of Skagerrak have the lowest. Since unpaid labour occurs to a varying degree in the different groups, it is difficult to draw conclusions based on total profit I.

2.2. Liquidity/ solvency

We have chosen to use liquidity grade 2 (Item 32 in Tables 1 and 4) (14) as a measure for liquidity in the farms as of 31.12.84. This expresses the ratio between the most liquid assets in circulation and short term debts. The traditional demand has been 100%, but several conditions, for instance circulation rate of debts and accounts payable are of importance. Average liquidity 2 in 1984 was 93.5% for the country as a whole. This was an increase from 1983. The best situation in accordance with this criterion could be found in the smallest and largest farms, where the ratio was over 100%. Among the largest farms there is one farm that increases the average very much. From a geographical point of view, the differences are not so conspicuous. However, both Northern Norway and Hordaland/Sogn and Fjordane are above the "demand" for 100%. But here, as in other cases, the fact that great variations exist within the groups, must be taken into consideration.

As a measure of solvency, it is common to use percentage of owner's capital. As with profit, one should keep in mind that it is the "real" owners' equity that one tries to measure (see Chapter 4). For the country as a whole, the average owner's

capital in the industry as of 31.12.84 is 43.46%, which is an increase from 1983. In particular, the two medium-sized groups increased the percentage of owner's capital. From a geographical view point, Hordaland, Sogn and Fjordane have an especially high average percentage of owner's capital. Even though the present calculations concern the "real" owners' equity percentage, the percentage seems very high compared with other industries. For older well-managed farms, the percentage of owner's capital is especially high. Good solvency and good liquidity are especially important factors for survival during bad times. (15)

2.3. Sales, Production and use of concessions, etc.

According to fish farming statistics for 1984, the sale of salmon and rainbow trout increased from 22,703 tons in 1983 to 25,451 tons in 1984. This was an increase of about 12%. According to the same survey, the average sales per fish farm were 62,715 kg in 1983 and 63,311 kg in 1984, or an increase of about 1% per farm. The profitability study shows a decline in sales per farm from 62,552 kg in 1983 to 60,770 kg in 1984 (see Tables 1 and 4). The reason for this was that the 1984 survey included comparatively few of the large farms. The decline is also apparent in production per farm but should not be taken as an indication of a general decline in production per farm for the industry as a whole.

Concerning production per person-year, this quantity has been comparatively stable from 1983 to 1984. Production per person-year is lowest in the smallest farms and those located in Northern Norway.

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Production per m^3 has also been comparit ively stable. The group between 5,000 and 6,999 m^3 and Sogn and Fjordane and Hordaland have the highest production per m^3. (16)

The average farmed volume in the selected 1984 group has been lower than in 1983. One reason for this was that there are far fewer farms over 15,000 m^3 than in 1983. This is reflected by the fact that the group over 7,000 m^3 showed a decline in the average farmed volume. Geographically, the largest average volume per farm is found in the area between Tröndelag - Hordaland. These are the same groups that showed the best income per year and the best net income.

Concerning the rate of "use of concession" (Item 29), a considerable decline is apparent from 1983 to 1984. In 1984, this rate was 86 %. The reason for limited use could be, for instance, that a facility is relatively new, that there is a lack of smolt, or that there are disease problems. The decline is considerable for all groups under 7,000 m^3 but is especially large for groups under 3,000 m^3. In the present study, newly established farms have been excluded. Only farms which also produced in 1983 are included. A number of farms have been started very carefully. There were, for instance, a number of farms in 1984 that had concessions for 8,000 m^3 but did not make use of more than $\frac{1}{4}$ of the volume that year. As explained, the lower rate of use can have several reasons.

Geographically, the Rogaland and Skagerrak coastal areas have the highest degree of concession use among the farms selected. (17)

The lowest degree of utilization is found in Northern Norway. The fish farms in Northern Norway have had a special problem obtaining smolt and that can explain, to some degree, the low utilization.

Average real capital is about the same as in 1983, but there are big changes from 1983 to 1984 within each size group. The reason can be a change in the combination of the selected groups. The farms were, as mentioned, smaller on an average, particularly in the largest group than they were in 1983. This is reflected in both sales and average real capital.

Geographically, Rogaland and the coast of Skagerrak have a low average real capital per farm.

Real capital per person year increased somewhat from 1983 to 1984. This was especially the case in the group between 5,000 and 6,999 m^3, while the group over 7,000 m^3, for reasons mentioned earlier, experienced a decline in this figure. Geographically, Rogaland and the coast of Skagerrak had the highest real capital per person year.

2.4. Costs per kg of fish produced

Based on Table 1 and Table 4 respectively, two tables (Tables 2 and 5) are presented showing the amounts of individual types of costs calculated per kg of fish produced. The tables also show total costs per kg of fish produced distributed, in %, over cost types, with(18) an intent to determine if there existed size- or geographical differences in total costs and/or the individual types of costs.

Perhaps most striking is the similarity among the groups. It appears possible to conclude that total costs per kg, as defined in the survey, average 30 - 32 kroner.

When it comes to individual types of costs, the total remuneration for labor amounts to 5-6 kroner per kg. However, the distribution of this remuneration between wages and imputed owner's wage varies from group to group. It should be mentioned that the cost item "imputed owner's wage" (see Chapter 4) contributes in a relatively high degree to unproportionately increasing costs on farms with a great deal of unpaid labour. This becomes especially apparent with the smallest farms which use to a great extent the owner and his family as labour.

Concerning smolt, fingerling, and feed costs, it is interesting to see that these costs amount to more than 50% of the total costs in most of the groups. However, the ratio between smolt /fingerling and feed costs differs from group to group.

The cost of smolt per kg is highest in Northern Norway and in the group Rogaland/Coast of Skagerrak. However, it should be noted (19) that the cost of smolt as defined in the study is not as related as the other types of costs to production quantity of the individual farm. The cost of smolt depends on the volume of fish stocked on the farm in 1984.

The cost of feed varies somewhat with the geographic location and the size of the farm. However, some of these differences seem to be more related to the combination of groups than to real factors.

3. TABLES (20)

TABLE 1: Operation results from fish farms 1983 and 1984, according to farmed volume. The Country as a whole. Average per farm.

		<3000m³		3 - 4999m³		5 - 6999m³		>7000m³		Average	
		1983	1984	1983	1984	1983	1984	1983	1984	1983	1984
1. Sales revenue[1]	Kr	904451	860311	1761986	1962147	2840929	2907668	6184747	4511971	2904007	2651021
2. Changes in stocks	"	32952	68150	207121	359916	442444	509761	303639	680197	256360	400544
3. Other revenue	"	-	67946	-	61413	-	164149	-	124070	-	104099
4. Sum of production income	"	-	996407	-	2383476	-	3581578	-	5216238	-	3155669
5. Financing income	"	-	7045	-	14080	-	24424	-	179991	-	61016
6. Total income	"	937413	1003452	1969107	2397556	3283272	3606002	6488386	5396229	3160367	3216680
7. Smolt-/fingerling costs	"	176085	224566	335668	380666	645324	689952	892504	861727	512507	542197
8. Feed costs	"	284862	310940	651840	695819	1018496	1111691	1532781	1484100	1008178	925595
9. Other variable costs	"	14740	16976	39215	48166	52798	62629	115060	82320	55927	54545
10. Sum of variable costs	"	462687	552482	1026723	1124651	1716618	1864272	2540345	2408147	1576612	1522337
11. Fixed oper. costs excl. wages	"	92677	106568	210841	235840	358793	442154	867529	587042	379030	350814
12. Wage costs	"	-	29162	-	222592	-	357359	-	555623	-	305190
13. Financing costs	"	56260	47162	137101	143314	229643	238628	261936	188231	174557	156635
14. Calculated write-offs	"	38142	40071	73423	97906	102933	144701	363280	226630	141930	132056
15. Calculated interest on owner capital	"	25156	27767	40540	68650	43788	83006	253327	249753	88168	114012
16. Costs except calc. own. wage	"	-	803212	-	1892953	-	3130120	-	4215426	-	2581044
17. Calculated owners wage[2]	"	-	155179	-	130841	-	130138	-	122533	-	133150
18. Costs including owners' wage	"	-	958391	-	2023794	-	3260258	-	4337950	-	2714194
19. Total income-costs (6-18)	"	-	45061	-	373762	-	345744	-	1088270	-	502486
20. Overall earning capacity	"	249491	229402	480569	737195	831598	833241	1660379	1766426	800070	940836
21. Number of person-years		1,64	1,59	2,45	2,5	3,58	3,98	6,39	5,07	3,50	3,34
22. Earning cap. per pers.-yr	Kr	146922	154668	196159	260914	200915	182447	260401	361721	199116	246231
23. Percentage owners capital	%	45,1	46,9	34,7	37,39	23,7	30,1	57,5	57,9	39,2	43,46
24. Average real capital	Kr	307731	276506	601814	819508	827291	1260028	2773179	1838934	1110939	1086135
25. Real capital per pers.-yr	"	211567	239504	264860	272814	206276	330069	383471	323461	269081	292192
26. Production per pers.-yr	Kg	24106	22720	25373	25690	27488	26677	27546	42654	26152	26513
27. Production per m^3	"	12,68	15,60	16,36	17,17	18,25	18,48	15,35	15,91	16,09	16,78
28. Average farmed volume	m^3	2208	1930	3534	3881	5496	5664	12222	9152	5801	5334
29. Use of concessions	%	86,5	49,4	97,3	82,2	103,5	92,4	104	111,4	98,5	86
30. Total profitability I	"	33,7	24,3	25,7	20,6	18,7	18,2	22,8	23,5	24,5	21,6
31. Total profitability II	"	14,2	7,6	17,8	11,0	15,5	12,6	19,6	20,9	17,1	13,4
32. Liquidity [2]	-	151	144	54	74	43	44	141	117	88	93,5
33. Average sale per farm	Kg	26419	25002	51873	55421	83594	87914	163968	120813	81233	74364
34. Of this, salmon	"	15028	16892	34092	46775	65306	72535	138115	99029	62552	60770
35. Of this, rainbow trout	"	11392	8110	17787	8646	18288	15379	25853	21784	18681	13586
36. Average production per farm	"	28038	28297	58767	69820	100213	101241	176991	141081	98991	88000
37. Number selected farms	-	20	19	41	31	28	20	27	27	116	97

In 1983 all types of income except changes in stocks gathered in post 1. 2) Types of costs were not specified in 1983.

Table 2. Production costs per kg farmed fish and spread in percentages on production costs per kg farmed fish 1984 according to the size of the farms.

	Size of Farms									
	<3000 m^3		3000-4999 m^3		5000-6999 m^3		≥7000 m^3		Average	
	Kr	%	Kr	%	Kr	%	Kr	%	Kr	%
Smolt/fingerling costs	7,93	23,4	5,45	18,8	6,82	21,2	5,97	19,4	6,16	20,0
Feed costs	10,99	32,5	9,97	34,4	10,98	34,1	10,52	34,2	10,52	34,1
Other variable costs	0,60	1,8	0,69	2,4	0,62	1,9	0,58	1,9	0,62	2,0
Fixed operational costs except wages	3,77	11,1	3,38	11,7	4,37	13,6	4,16	13,5	3,99	12,9
Wage costs	1,03	3,0	3,19	11,0	3,53	11,0	3,94	12,8	3,47	11,3
Calculated owners' wage	5,48	16,2	1,87	6,5	1,29	4,0	0,86	2,8	1,51	4,9
Finance costs	1,67	4,9	2,05	7,1	2,36	7,3	1,33	4,3	1,78	5,8
Calculated interest on owners capital	0,98	2,9	0,98	3,4	0,82	2,6	1,77	5,8	1,30	4,2
Calculated amortizations	1,42	4,2	1,40	4,8	1,43	4,4	1,61	5,2	1,50	4,9
Sum	33,87	100	28,98	100	32,22	100	30,74	100	30,85	100

TABLE 3:

Earning capacity per person year for each individual farm selected, according to the size of farms.

$<3'm^3$	$3' - 5'm^3$	$5' - 7'm^3$	$\geq 7'm^3$
-106268	-368706	-366524	-348938
-80811	-336327	-288149	-295898
16979	-240956	-98357	-103125
30960	-225569	-36753	61836
39573	-194135	76673	129679
44576	-69209	103114	129970
64283	60084	110702	135006
78517	61502	112420	172147
107505	89143	124331	235021
109287	115803	129648	280725
128828	124048	166691	298988
142103	206645	173297	350030
157414	207504	199624	350264
190765	215749	206629	378553
199875	248108	300497	379375
216458	268910	340583	419070
383275	269460	442662	422476
594305	338574	489193	437763
621002	349590	593876	474402
$\bar{x}$=154668	349659	868768	483080
S=193279	353526	$\bar{x}$=182447	507888
S/$\bar{x}$=1,250	398628	S=283372	521607
n=19	404341	S/$\bar{x}$=1,553	523607
	404439	n=20	549796
	410739		723032
	460292		893105
	471240		1099021
	523446		$\bar{x}$=341055
	628977		S=313755
	677389		S/$\bar{x}$=0,920
	722288		n=27
	826843		
	$\bar{x}$=260914		
	S=286731		
	S/$\bar{x}$=1,099		
	n=31		

Definitions:

$$\bar{x} = \frac{\sum x}{n}$$

$$S = \sqrt{\frac{n\sum x^2 - (\sum x)^2}{n(n-1)}}$$

n = number of observations

x = one single observation

TABLE 4: Operational results for fish farms 1984 according to geographical location, Country as a whole, Average per farm.

		Finnmark, Troms and Nordland	N. and S.Trønde-lag,Møre and Romsdal	Sogn and Fjordane Hordaland	Rogaland and coast of Skagerrak	Average
1. Sales revenue	Kr	2703856	2415697	35408073	1653740	2651021
2. Changes in stocks	"	441003	521586	333624	193923	400544
3. Other revenue	"	108235	86250	152099	59977	104099
4. Sum of production income	"	3253094	3023533	4026596	1907640	3155664
5. Financing income	"	31785	114004	28575	34361	61016
6. Total income	"	3284879	3137537	4055171	1942001	3216680
7. Smolt-/fingerling costs	"	657698	493839	619365	378205	542197
8. Feed costs	"	1011452	745797	1251126	682596	925595
9. Other variable costs	"	102599	29186	73176	19680	54545
10. Sum of variable costs	"	1771749	1268822	1943667	1080481	1522337
11. Fixed oper. costs excl. wages	"	320980	362758	457972	187853	350814
12. Wage costs	"	290022	325065	386322	148034	305190
13. Financing cost	"	191740	150261	181171	86829	156635
14. Calculated write-offs	"	135541	154753	135038	73207	132056
15. Calculated interest on owner capital	"	80887	132547	140376	72033	114012
16. Costs except calc. owner wage	"	2790919	2394206	3244546	1649237	2581044
17. Calculated owner wage	"	187775	90767	124202	172126	133150
18. Costs including owners wage	"	2978694	2484973	3368748	1821363	2714194
19. Total income - costs (6-18)	"	306185	652564	686423	120638	502486
20. Overall earning capacity	"	783982	1068396	1196947	441590	940826
21. Number of person-years		3,73	3,22	3,95	2,15	3,34
22. Earn. capac. per person year	Kr	195281	262029	359581	91169	246231
23. Percentage owners capital	%	29	36	63	47	43,46
24. Average real capital	Kr	1118418	1266702	1144463	556011	1086135
25. Real capital per person-year	"	298893	302365	243862	292192	292192
26. Production per m^3 pers.-yr	Kg	19001	27	30549	27500	26513
27. Production per m^3	"	16,57	14,1	22,57	13,51	16,78
28. Average farmed volume	m^3	4584	5900	5745	4367	5334
29. Use of concession	%	71	85	83	114	86
30. Total profitability I	"	17	21	34	10	21,6
31. Total profitability II	"	8	12	27	8	13,4
32. Liquidity 2	"	109	82	105	82	93,5
33. Average sale per farm	Kg	80410	62309	99836	51789	74364
34. Of this, salmon	"	80398	53666	75233	28322	60770
35. Of this, rainbow trout	"	12	8643	24603	23467	13586
36. Average production per farm	"	95344	82848	106325	60316	88000
37. Number selected farms	"	20	35	26	16	97

TABLE 5: Production costs per kg farmed fish and spread in percentages on production costs per kg farmed fish 1984 after geographical location of the farms.

	GEOGRAPHICAL LOCATIONS									
	Group I		Group II		Group III		Group IV		Average	
	Kr	%	Kr	%	Kr	%	Kr	%	Kr	%
Smolt-/ fingerling costs	6,90	22,1	5,96	19,8	5,83	18,4	6,27	20,8	6,16	20,0
Feed costs	10,61	34,0	9,00	30,0	11,77	37,2	11,32	37,5	10,52	34,1
Other variable costs	1,08	3,5	0,35	1,2	0,69	2,2	0,33	1,1	0,62	2,0
Fixed operational costs except wages	3,37	10,8	4,38	14,6	4,31	13,7	3,12	10,3	3,99	12,9
Wage Costs	3,04	9,7	3,92	13,1	3,63	11,5	2,47	8,2	3,47	11,3
Calculated owner wage	1,97	6,3	1,10	3,7	1,17	3,7	2,85	9,4	1,51	4,9
Financing costs	2,01	6,4	1,81	6,0	1,70	5,4	1,44	4,8	1,78	5,8
Calculated interest on owners capital	0,85	2,7	1,60	5,3	1,32	4,2	1,19	3,9	1,30	4,2
Calculated amortizations	1,42	4,5	1,87	6,2	1,27	4,0	1,21	4,0	1,50	4,9
Sum	31,25	100	29,99	100	31,69	100	30,20	100	30,85	100

Group I = Finnmark, Troms and Nordland

Group II = N. and S. Tröndelag and Möre and Romsdal

Group III = Sogn, Fjordane and Hordaland

Group IV = Rogaland and the coast of Skagerrak

TABLE 6: Earning capacity per person year on each individual farm selected according to geographical location.

Group I	Group II	Group III	Group IV
-288149	-368706	-103125	-366524
-225569	-336327	61502	-348938
-106268	-295898	112420	-194135
-98357	-240956	128828	-80811
44576	-69209	135006	16979
61836	-36753	142103	30960
78517	39573	157414	60084
103114	89143	173297	64283
107505	110702	190765	76673
109287	124331	235021	124048
115803	129648	280725	206629
298988	129679	300497	215749
338574	129970	349659	383275
340583	166691	353526	349590
404439	172147	378553	437763
442662	199624	379375	483080
460292	199875	398628	$\bar{x}$=91169
471240	206645	489193	S=255727
523446	207504	523607	S/$\bar{x}$=2,805
723032	216458	549796	n=16
$\bar{x}$=195281	248108	593876	
S=267737	268910	621002	
S/$\bar{x}$=1371	269460	628977	
n=20	350030	677389	
	350264	722288	
	404341	868768	
	410739	$\bar{x}$=359581	
	419070	S=237844	
	422476	S/$\bar{x}$=0,662	
	474402	n=26	
	507888		
	521607		
	594305		
	826843		
	893105		
	1099021		
	$\bar{x}$=262029		
	S=305711		
	S/$\bar{x}$=1,167		
	n=35		

Group I = Finnmark, Troms and Nordland

Group II = N. and S. Trøndelag and Møre and Romsdal

Group III = Hordaland, Sogn and Fjordane

Group IV = Rogaland and the coast of Skagerrak

Definitions of x, s and n; see Table 3.

TABLE 7: Numbers of farms included in the study/total numbers of farms under each group

Selected Farms / Farms, total	<3000m³	3000-4999m³	5000-6999m³	>7000m³ =	Sum
Finnmark, Troms Nordland	5/15	7/36	5/22	3/20	20/93
N. and S. Trøndelag Møre and Romsdal	4/15	12/28	6/35	13/66	35/144
Sogn and Fjordane Hordaland	5/21	7/35	6/30	8/29	26/115
Rogaland and coast of Skagerrak	5/20	5/10	3/9	3/9	16/48
Sum	19/71	31/109	20/96	27/124	97/400.

TABLE 8: %-distribution in groups of selected farms / total numbers of farms

% of selected farms/ total numbers of farms	<3000m³	3000-4999m³	5000-6999m³	>7000m³ =	Sum
Finnmark, Troms Nordland	25 / 16	35 / 39	25 / 24	15 / 22	21 / 23
N. and S. Tröndelag Möre and Romsdal	11 / 10	34 / 19	17 / 24	37 / 46	36 / 36
Sogn and Fjordane Hordaland	19 / 18	27 / 30	23 / 26	31 / 25	27 / 29
Rogaland and coast of Skagerrak	31 / 42	31 / 21	19 / 19	19 / 19	16 / 12
Sum	20 / 18	32 / 27	21 / 24	28 / 31	100 / 100

4. DEFINITIONS AND METHODS OF CALCULATION

We explain here the methods of calculation and definitions used for the individual items in the profitability study for fish farming in 1984. The numbers of the different items refer to the numbers in Tables 1 and 4.

All quantities included in the tables are calculated for individual farms. It is, therefore, not possible in the tables to divide given total quantities such as earning capacities and capital investments by the number of person years and obtain earning capacity per person year and capital investment per person year.

1. Income from sales.

The income the farm has obtained from the sale of farm fish and/or roe.

2. Changes in stocks

Changes in stocks are the differences between stocks of live fish as of 31.12.83 and the stocks of live fish as of 31.12.84 estimated at 70% of average sales prices for the individual size groups in 1984.

3. Other income.

Income originating from anything else but (1). This can be sale of feed, transfer of smolt, sale of equipment, compensation for fish losses in 1984. It should be noted in this context, (30)

concerning the sale of other things than (1), that it is only when this income represents a small part of the total turnover that it is included. In cases where other income represents much of the total, this income and the activities and costs connected with it are separated from fish farming activities. If this is not possible, the whole farm is excluded from the study.

4. Sum of production income.

The sum of income from sales, stocks changes, and other income.

5. Income from financing.

Interests from bank deposits and other financing income.

6. Total income.

Sum of production income and income from financing.

7. Smolt/ fingerling costs.

Purchased smolt and fingerling of trout.

8. Feed costs.

Consumption of feed. (31)

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Information seulement

9. Other variable costs.

Consist mainly of expenses connected with sales, freight and packaging.

10. Sum of variable costs.

The sum of smolt/ fingerling costs, feed expenses and other variable costs.

11. Fixed operational costs exclusive of wages.

Includes maintenance, electricity, building rent, office expenses, insurance, etc.

12. Wage costs

Include all remuneration for work listed as wages in the books including employer expenses and other social expenses.

13. Financing costs.

Include interests on loans and other financing costs.

14. Calculated depreciation. (32)

The depreciation is based on replacement cost, but it has to be adjusted to the effect of debt-% on financing. A farm

is seldom financed by owner's capital alone. The purpose of the depreciation must be to maintain a constant owners' capital percentage of plant and equipment. We have, therefore, chosen the following principle: The owners' capital percentage of fixed assets is depreciated linearly based on replacement cost. The debt % (borrowed capital) is depreciated linearly based on historic cost price (building price/purchase price adjusted to subsequent outlays). This is the same principle of depreciation that was used in the two profitability studies on all-year operating fishing vessels, undertaken by the Budget Committee for the Fishing Industry. The Budget Committee uses the book write-off figures as an expression for historic cost price, when the latter is not known. For fish farms, which on the whole are newer than fishing vessels, the historic cost price is used directly in the calculations. The calculated replacement cost of plant and equipment is based on the historic cost price and also wholesale price indices.

15. Imputed interest on owner's capital.

A report commissioned by the Budget Committee for the Fishing Industry shows that the use of a replacement value results in double counting if one uses nominal interest on a security as a base for computation of imputed interest on owner's capital. It is more correct to make use of a real interest which appears as the difference between the nominal interest and the rate of inflation for the year in question. We have the following relation:

$$\text{Real Interest} = \frac{\text{Nominal interest - inflation rate}}{1 + \text{inflation rate}}$$

We have used the nominal interest in 1984 of 5% government bond loan 1961, series II, which was 12.2%. The inflation rate for 1984 averaged 6.3%. Thereby we obtain a real interest rate of 5.5%.

16. Sum of costs exclusive of imputed owner's wages.

The sum of variable costs, fixed operating costs, wage expenses, financing costs, calculated depreciations and interests on owners' capital.

17. Imputed owner's wage.

Number of hours of unpaid work by owner and possibly family in 1984 multiplied by a rate of 70, - per hour.

18. Sum of costs inclusive of imputed owner's wage.

The sum of ordinary costs exclusive of imputed owner's wage. (34)

19. Total income - total costs.

This is the "clear profit" which appears when all costs including imputed owner's wages and imputed interest on owner's capital are deducted from the total income.

20. Earning capacity

Expresses how much the activity would be able to pay for labor after all other fixed and variable costs are covered in conformity with what usually is considered reasonable in terms of business economy. Earning capacity is defined as total income minus the sum of costs including calculated depreciations, interests on borrowed capital and imputed interests on owner's capital but exclusive of wages, employer's fees to social security and imputed owner's wage.

21. Number of person years.

The sum of the total number of person years done on the farm in 1984. The figure used is the same as that used by the Budget Committee for agriculture, where a person year equals 1975 hours. Both paid and unpaid work are included.

22. Earning capacity per person year (35)

The tables gives total earning capacities, numbers of person years, and earning capacities per person years in figures calculated independently of each other, as arithmetic averages of figures for individual farms. Therefore, it is not possible, in the tables, to divide earning capacities by the number of person years to obtain earning capacities per person year.

23. Owner's capital percentage.

The percentage of the owner's capital is computed on the basis of the balance of 31.12.84. The following formula is used:

$$\frac{\text{Owner's Capital + 50\% of locked-in tax-free fund allocations} \times 100}{\text{Total capital (31/12)}}$$

Compared with other industries, one must be aware that both the owner's capital and total capital are based on "real" values . This means that the value of plant and equipment is set at the sum of the calculated replacement costs of all individual operating equipment. Stocks of live fish are evaluated at number of kilos multiplied by average price in 1984 multiplied by (1 - average loss percentage).

24. Average real capital in the farms 31.12. 1984.

Real capital is here understood /to be the value of plant and equipment assessed at replacement cost but depreciated over the period of service life.

25. Real capital per person year.

This is influenced by the age of the fish farm. If the figure is high, this does not allow the immediate conclusion that the farm is capital-intensive. For the same reason, as mentioned under Item 22, one cannot directly, based on the tables, divide the average real capital by number of person years. (36)

26. Production per person year.

Production divided by the number of person years carried out at each farm. Production is defined here as sales (kg) ± change in stocks (kg). For the same reason as mentioned under Item 22, one cannot directly divide average production by number of person years and get production per person year.

27. Production per m^3.

Production per cubic meter of developed farmed volume. "Developed" means a volume that is in operation for the production of food fish (used in the production). Also this quantity is calculated for the individual farm, and production means sales (kg) ± change in stocks (kg).

28. Average farmed volume.

This means the maximum actual capacity in use in production during one year.

29. Making use of concessions (37)

Actual farmed volume used as a percentage of the farming volume for which concession was granted. The quantity is calculated for the individual farm.

30. Total profitability I.

Expresses the yield from the total capital of an undertaking.

Definition:

$$\frac{\text{Profits before extraordinary items + financing costs} \times 100}{\text{Total capital (31/12)}}$$

Extraordinary items are income and costs which are not directly associated with the production at the food fish farm, and which are not, as a rule, normal. Examples of such items are gains or losses through sale of plant and equipment, gifts, etc.

In comparison with other industries, it should be noted that for practical reasons, we have had to use total capital at the end of the year instead of average total capital. One should also be aware that, as in Item 23, an attempt has been made to evaluate plant & equipment and stocks of live fish on the basis of real assessments. Total profitability I only includes wages actually paid.

31. Total profitability II.

Similar to total profitability I, but it includes imputed wages for the contribution of the owner and his family. (38)

32. Liquidity 2

This explains how much short-term liquid assets a farm has compared to short-term debts as of 31.12.84. It could be argued that stocks of live fish ought to be included, but we have taken the view that harvesting fish during a liquidity crisis is too short-sighted a solution. Live fish are therefore completely excluded from the assessment of liquidity.

Definition:

$$\frac{\text{Liquid assets + financial investments + accounts receivable}}{\text{Short-term debt}}$$

Financial investments: Short term investments in shares, bonds, etc.

33. Average sales per farm.

Number of kg of farmed salmon and farmed trout sold in 1984 on an average per farm.

34. Of 33, salmon.

Number of kilo farmed salmon sold in 1984 on average per farm.

35. Of 33, trout.

Number of farmed trout sold in 1984 on an average per farm.

36. Average production per farm.

Sales (kg) $\pm$ changes in stocks (kg)

37. Number of farms selected.

Number of farms participating in the study, assigned to their respective groups.

E N C L O S U R E A (43)

ADVANTAGES OF LARGE-SCALE OPERATION.

One of the conclusions in the 1982 study was that farms between 7,000 and 15,000 m^3 appeared to have the highest earning capacity per person year. After this study was made public, discussion has taken place as to the advantages of large-scale operations and concession limits in relation to a possible, optimal concession size. Based on the version of analysis used in profitability studies, some comments on this discussion are given here.

The advantages of large-scale operations are something that one expects to find, up to a certain level, in most industries. Advantages of large-scale operations are defined as a decrease in average costs by an increase in production. As for the fish farming industry, one can say that all other things being equal, large-scale operational advantages exist, since the production costs of 1 kg fish are lower at a total production of for instance 50 tons than at a total production of 40 tons.

In the same way as in most industries one would expect to find examples of advantages of large-scale operations, one would also expect to find a stage in production where the advantages cease. Very seldom can one expect advantages of large-scale (44)
operations to continue indefinitely. Sooner or later one will reach an optimal point. That is the production level where the

company has the lowest average costs.

Regardless of how a company chooses to arrange its production, it will be of interest to know the area of production that leads to lowest average costs. If a company or industry is characterized by that this point is reached at at comparatively low production, or in other words, that small companies can produce cheaper or as cheap as larger ones, it can be said that this company or industry receives no advantages by operating on a large scale. At the same time it can be said that a company or industry has large-scale advantages if the larger companies manage to produce more cheaply than the small ones.

There are several reasons for advantages occurring in large-scale production. We will discuss some of these, which can be of interest in the fish farming industry. The list is in no way meant to be complete. One reason often mentioned is that larger operations lead to more specialization and thereby more effective use of the work force. Another reason is that larger units have the possibility of obtaining efficiency-promoting machines and equipment which are usually unavailable in smaller versions. Thirdly it is possible that larger companies can obtain more favourable financing terms than smaller ones.

To find if there exist advantages for large scale operations in fish farming, it is necessary to concentrate on the costs. (45)
Many of the measures of profitability used by the Directorate for Fisheries also include the income side of the industry. They are, therefore, not very suited to the study of advantages of large-scale

operations as defined in the economic theory. It is also evident that the division into groups, as done in these studies, in which farmed volume constitutes the criterion for division, is not always necessarily decisive for production quantity at the individual farm. Thirdly, in the fish farming industry as in many others, it is possible to make use of a number of large scale operational advantages by means of different forms of cooperation and division of common functions between several farms, even if the individual farm is not very large. We are familiar with forms of cooperation such as common feed production, renting of equipment, common use of equipment, common administration and direct physical cooperation, all relatively common in fish farming. For most of these forms, if they are rational, no limit is set in the size-limitation regulations of the concession law. On the other hand the Fishery Directorate, in its profitability studies, takes no account of in which groups such cooperation is most common, except for the case of direct physical cooperation, which has been taken into account. Factors like experience, competence, skill, leadership, and the location of the farm will clearly have an influence on costs and profitability. Up to now, this influence has not been adequately (46) illustrated in the material used. All these factors should imply that, based on the material in the profitability studies, one should be cautious about arriving at fixed conclusions with regard to advantages of large-scale operations in this business.

So far these studies have aimed at the clarification of profitability according to different criteria for groups of farms which have been defined in advance. It has become apparent that

profitability according to these criteria in all three studies has been best for farms between 7,000 and 15,000 m^3. However, it has always been emphasized that in the group of farms over 15,000 m^3 data has been very limited.

On the other hand, the Fishery Directorate is also of the opinion that the knowledge of whether advantages of large-scale operations exist in the fish-farming industry will be of great importance both for fish farmers and for the administration. However, the assumption must be that in a study of this kind, one must take into consideration the points previously mentioned. One can question the relevancy of the view that there exists <u>one</u> optimal size for all fish farming extablishments. Due to the great differences in the character of the different localities, for instance, an optimal size will differ substantially from farm to farm. In other words, there is reason to assume that the disadvantages of large-scale operations will become apparent at different levels of production, depending on, among other things, location, as long as today's technology and production methods are prevalent. (47)

E N C L O S U R E B (48)

1. Profitability questionnaire, fish farming 1984

2. Fish Farming 1984 (partly used in the profitability study).

AARD44

The Fishery Directorate
Post Box 185-186
5001 Bergen
Tel. (05) 23 03 00

PROFITABILITY FORM - FISH FARMING
1984
Obtained by authority from statute
14-6-85

Firm (to be filled out by the Fishery Directorate)	Registration Mark
County/Municipality (SSB) (Central Bureau of Statistics)	SERIAL NUMBER

It is not necessary to fill out page 1 and 2 if profit and balance sheet for 1984 (per 31.12) is attached.

All items must be inidcated without value-added tax, if it warrants deduction. Investment tax must be added if the merchandise is subject to it

Working expenses 1984

Dry feed, medicine, medical feed, and vitamin additions		
1. - for fingerling farms	kr.....	
2. - for food fish farms	kr.....	
Approximate stock of dry feed per 01.01.84:	kg	
" " " " " " 31.12.84:	kg	
3. Unprocessed feed	kr.....	
Approximate stock of unproc. feed per 01.01.84:	kg	
" " " " " " 31.12.84:	kg	
4. Ice, boxes	kr.....	
5. Sum of Items 1-4		kr.....
6. Purchased fingerling/smolt		kr.....
Wages incl. social and employers' fees		
7. Wages in fingerling farms / hatcheries		kr.....
8. Wages in food fish farms		kr.....
9. Transport costs	kr.....	
10. Insurance of fish in fingerling farms		
11. Insurance of fish in food fish farms	kr.....	
12. Insurance of fingerling farm/hatchery	kr.....	
13. Insurance of food fish farm	kr.....	
14. Maintenance costs, fingerling farm /hatchery	kr.....	
15. " " food fish farms	kr.....	
16. Electricity	kr.....	
17. Sundry office expenses,	kr.....	
18. Administration costs - bookkeeping etc)	kr.....	
19. Interest on short-term debts(operational credits,	kr.....	
20. " " investment loans to fingerling farms/ and hatcheries)	kr.....	
21. " " " " " food fish farms	kr.....	
22. Summary of Items 9-21		kr.....
Sundry other items (specify)		kr.....
23.		kr.....
24.		kr.....
25.		kr.....
26. Total expenses		kr.....

B A L A N C E P E R 31. 12. 1984

PROPERTY (Activa)			DEBTS AND OWNERS CAPITAL (Passiva)		
Investments in farm			**Loans in government banks (give name of bank)**		
27 Fingerling farm/hatchery		kr.....	42	kr.....	
28 Food fish farm		kr.....	43	kr.....	
Fish Stocks			44 Loans in DUF	kr.....	
29 Fingerling farm		kr.....	45 Loans in private banks	kr.....	
30 Food fish farm		kr.....	46 Other loans	kr.....	
Stocks of Feed			47 Total long term debts (sum 42-47)		kr.....
31 Fingerling farm		kr.....	Distribution of total long-term debt (47)		
32 Food fish farm		kr.....	Fingerling farm/hatch.	kr.....	
33 Accounts outstanding (debtors)		kr.....	Food fish farm	kr.....	
34 Bank deposits		kr.....	48 Line of credit		kr.....
35 Cash		kr.....	49 Distributor debts (creditors)		kr.....
36 Shares in other companies		kr.....	50 Due VAT and investment taxes		kr.....
37 Shares in Fish Farmers Co-op		kr.....	51 Tax deductions		kr.....
Other property (Specify)			Other Debts (specify)		
38		kr.....	52		kr.....
39		kr.....	53		kr.....
40		kr.....	54 Conditional tax-free funds		kr.....
			55 Owners capital (incl. reserve fund etc)		kr.....
TOTAL PROPERTY	41	kr.....	TOTAL PROPERTY	41	kr.....

INVESTMENTS IN THE FARM

Component			NUMBER	PURCHASED				
				Year	Original Purchase Sum	Type		
HATCHERY	Hatchery boxes	56						
	Fry tanks	57						
	Water treatment plant	58						
		59						
		60						
FINGERLING FARM	Works bldgs.	61						
	Concrete dams	62						
	" "	63						
	Plastic/glass fiber tanks	64						
	" "	65						
	Floating fish pens	66						
	" "	67						
	Automatic feeders	68						
	" "	69						
	Pumps	70						
		71						
		72						
FOOD FISH FARM	Works bldgs.	73						
	Floating fish pens	74						
	" "	75						
	" "	76						
	Nets	77						
	"	78						
	Automatic feeders	79						
	" "	80						
	Cold storage plant	81						
	Feed mixers	82						
	Feed grinders	83						
	Floating docks	84						
	Docks	85						
	Boats, in feet	86						
	Motors, in HP	87						
	Cranes, in tons	88						
	Trucks, in tons	89						
		90						
		91						
		92						
		93						
		94						

A. Did the fish farm have income other than sale of fish in 1984?.....
If yes, indicate what kind of income:.....
Amount of income, kr . . . . . .

B. If you have processed fish n your own farm (smoking, light salting, light salting-fermenting, filleting), indicate the total sales from this fish? kr.....

C. Insurance value of investment in fingerling farm/hatchery in 1984 kr.....
" " " " " food fish farm in 1984 , kr.....

D. Work on farm (in fish-raising)

	OWNER				HIRED HELP				TOTAL HOURS
	Persons	Weeks	Hours per Day	Total Hours	Persons	Weeks	Hours per Day	Total Hours	+Fam+1 (owner + family + hired help)
Permanently employed Personnel									
Seasonal Help									
								TOTAL HOURS	

E. Total hours divided on Fingerling f./hatchery .....
Food fish farm.....

F. How big losses have you had on an average in the last 3 years?
Salmon:.....%
Trout:.....%

G. What feed factor are you calculating with when using dry feed:.....
wet feed:.....

H. What was the average weight at the end of the year?
- for salmon stocked in 1984:.....kg
Before.....kg
On trout stocked
Fall 1984:.....kg
Spring 1984:.....kg
Before:.....kg

I. Has the concession in the physical sense been operated together with one or several other concessions (as one entity?)

Yes ☐ No ☐

If yes -

Other information:.....
.....
.....

The form filled out by:	Address:	Telephone:
	For Firm. Date and Signature	

Directorate Postboks 185-186
5001 Bergen
Tlf (05) 23 03 00

FISH FARMING 1984

FISKEOPPDRETT 1984

Pursuant to Order in Council of January 10th, 1975 and statute of May 1981 all are obliged to report.

Etter Kgl. res. av 10. januar 1975 og lov av 15. mai 1981 plikter alle å gi opplysninger.

Operations on farm in 1984 and ownership condition

Work input at farm 1984

Firma (fylles ut av Fiskeridirektoratet) Firm (to be completed by the Fishery Directorate)			Registreringsmerke Registration Mark
Fylke/kommune (SSB) County/Municipality			Løpenr. Serial Number
Virksomhet i anlegget i 1984 og eierforhold	01	Matfiskproduksjon? food fish production? 1 ☐ Ja yes 2 ☐ Nei no	
	02	Produksjon av yngel og/eller settefisk til matfiskproduksjon? Production of fry and/or fingerling for production of food fish 1 ☐ Ja yes 2 ☐ Nei no	
	03	Produksjon av yngel og/eller settefisk til utsetting i vassdrag? Production of fry and/or fingerling for stocking waters 1 ☐ Ja yes 2 ☐ Nei no	
	04	Eierforhold Owner relationship 1 ☐ Aksjeselskap Joint-stock Co. 2 ☐ Andelslag Co-op 3 ☐ Personlig selskap one person company 4 ☐ Firma med delt ansvar Firm with divided resp. 5 ☐ Andre /other	
Arbeidsinnsats ved anlegget i 1984	05	Samlet arbeidsinnsats i Total work input	Timeverk Person-hours
	06	Herav utført av leid hjelp Out of this, by hired help	

Capacity Data 1984

KAPASITETSDATA 1984

Fingerling farm capacity used.

Klekkeri Hatchery	07	Maksimal kapasitet pr. klekkeomgang Maximum capacity at each hatch			Liter rogn litre roe
	08	Miljø environment 1 ☐ Ferskvann /fresh water 2 ☐ Saltvann /salt water 3 ☐ Både ferske- og saltvann Both fresh + salt water			
Settefiskanlegg. Utnyttet kapasitet			Antall number	Total areal m^2 Total area	Total volum m^3 Total volume
	09	Jorddammer earth dams			
	10	Betongdammer concrete dams			
	11	Flytemærer Floating fish pens			
	12	Plast-/glassfiberkar Plastic/ fiber glass tanks			
	13	Andre typer produksjonsenheter Other types of production units			
	14	Dersom noen av disse produksjonsenhetene (linje 09-13) har vært nyttet til matfiskprod. i løpet av året, oppgi areal og volum for disse	If any of these production units (line 09-13) have been used for food fish farming during the year, give area and volume		

Food Fish Farm Capacity Used.

Matfiskanlegg. Utnyttet kapasitet	15	Jorddammer earth dams				
	16	Flytemærer Floating fish pens	Ferskvann Fresh water			
	17		Saltvann Salt water			
	18	Innhegninger Enclosures				
	19	Avstengninger Closed-off areas				
	20	Andre typer produksjonsenheter Other types of Farming units	Ferskvann Fresh water			
	21		Saltvann Salt water			

RA-9905 1.85. 900 Skjema foreligger i begge målformer. Form available in both language variations.

Production of roe, fry and fingerling, 1984

PRODUKSJON AV ROGN, YNGEL OG SETTEFISK 1984

Egen stamfisk own parent fish	22	Hadde anlegget egen stamfisk pr. 31. desember 1984? 1 ☐ Ja yes 2 ☐ Nei no	Had the farm its own parent fish as of December 31, 1984?	
Production of Roe Produksjon av rogn og startfôret yngel and start-fed fry	23	Hadde anlegget produksjon av rogn og yngel i 1984? 1 ☐ Ja yes 2 ☐ Nei no	Hvis ja, oppgi mengde, linje 24-27 Had the farm production of roe and fry in 1984? If yes give quantities (24-27)	
	24	Laks (Rogn innlagt høst 83/vår 84) Salmon (roe introduced fall -83, spring -84)	Innlagt rogn Liter Roe introduced Litres	Startfôret yngel 1000 stk. Fry on feed, 1 000
	25	Regnbueørret Rainbow Trout		
	26	Andre fiskeslag (oppgi hvilke): Other kinds of fish (specify)		
	27			
Uttak av settefisk Fingerling taken	28	Hadde anlegget uttak av settefisk i 1984? 1 ☐ Ja yes 2 ☐ Nei no	(Hvis ja, oppgi antall, linje 29-34) Did the farm take out fingerling in '84? If yes give quantities (29-34)	1000 stk.
	29	Laksesmolt, to-årig og eldre Salmon smolt, 2 yrs. old		
	30	Laksesmolt, ett-årig Salmon smolt, 1 yr. old		
	31	Regnbueørret klekket før 1984 Rainbow trout hatched before 1984.		
	32	Regnbueørret klekket i 1984 Rainbow trout hatched in 1984		
	33	Andre fiskeslag (oppgi hvilke): Other kinds of fish (specify)		
	34			

Purchase of roe, fry and fingerling 1984

KJØP OG SALG AV ROGN, YNGEL OG SETTEFISK 1984

			Kjøp Purchase		Salg Sale	
			Liter	Verdi 1000 kr (ekskl. m.v.a.)	Liter	Verdi 1000 kr (ekskl. m.v.a.)
Roe Rogn	35	Laks Salmon	Litre	Value 1000 kr (excl.VAT)	"	"
	36	Regnbueørret Rainbow trout				
	37	Andre fiskeslag Other kinds of fish				
Startfôret yngel Start-fed Fry	38	Laks, under 7 cm Salmon under 7 cm	1000 stk.		1000 stk.	
	39	Regnbueørret Rainbow Trout				
	40	Andre fiskeslag Other kinds of fish				
Settefisk Fingerling	41	Laks, over 7 cm Salmon over 7 cm				
	42	Laksesmolt, to-årig og eldre Salmon smolt 2 yrs and older				
	43	Laksesmolt, ett-årig Salmon smolt 1 yr old				
	44	Regnbueørret klekket før 1984 Rainbow trout hatched before 1984				
	45	Regnbueørret klekket i 1984 Rainbow trout hatched in 1984				
	46	Andre fiskeslag (oppgi hvilke): Other kinds of fish (specify)				
	47					

Slaughter, sale etc. of food fish 1984

SLAKT, SALG M.V. AV MATFISK 1984

			kg. round Kg rundvekt weight		
			Laks	Regnbueørret	Andre
			Salmon	R b.Trout	Other
Slaughter, sale and stored Slakt, salg og lagerbeholdning av slaktet matfisk (fersk/frossen) stocks of slaughtered food fish (Fresh/ Frozen)	48	Slaughtered fish in store 1.1.84 Slaktet fisk på lager 1. januar 1984			
	49	Fish taken for slaughter in 1984 Fisk tatt opp til slakt i 1984			
	50	Fish sold in 1984 (unprocessed) Fisk solgt i 1984 (uforedlet)			
	51	For processing in own plant Gått til foredling i eget anlegg			
	52	Sundry (own housekeeping, rejects, etc.) Diverse (egen husholdning, vrak)			To be processed in own plant
	53	Slaughtered fish in store 31.12.84 Slaktet fisk på lager 31. desember 1984 (uforedlet)	(unprocessed)		
Volume and value of food fish Mengde og verdi av matfisk		Fresh or frozen fish sold in 1984 (unprocessed)..... Amount in kg round weight	← Fersk eller frossen fisk solgt i 1984 (uforedlet)		Til foredling i eget anlegg
			Mengde i kg rundvekt	Verdi i 1000 kr (ekskl. m.v.a.)	Kg rundvekt
	57	Laks i alt Salmon, total		Value in 1000 kr	Kg round weight
	61	Regnbueørret i alt Rainbow trout, total		(ex.)	
	62	Andre fiskeslag (oppgi hvilke): Other kinds of fish (specify)			
	63				
	64				

Remarks and Comments

MERKNADER OG KOMMENTARER

STOCKS
BEHOLDNINGER

Fingerling farm, Settefiskanlegg. Beholdning pr. 31. desember 1984 stocks as of 31.12.84	72	Salmon Laks	Stock fish under 7 cm Settefisk under 7 cm	1000 stk. Units of 1000
	73		Fingerling, over 7 cm Settefisk, over 7 cm	
	74	Rainbow Trout - all ages Regnbueørret, alle aldre		
	75	Andre fiskeslag (oppgi hvilke): Other kinds of fish (specify)		
	76			
	77			

				Numbers of fish Antall fisk. Stk.			
				Beholdning 1.1.1984 stocks	Tilgang 1984 (utsatt) +	Frafgang 1984 (slakt/svinn) −	Beholdning 31.12.1984 =
Matfiskanlegg Food Fish Farm	78	Salmon Laks	Set out before '84 Utsatt før 1984	1.1.1984	Added-84 (set out)	Removed 1984 (slaughter/ losses)	Stocks 31.12.84
	79		Set out in '84 Utsatt i 1984	—			
	80	Rainbow Trout Regnbueørret	Set out before '84 Utsatt før 1984		—		
	81		Set out in Spring '84 Utsatt våren 1984				
	82		Set out in Fall '84 Utsatt høsten 1984	—			
	83	Andre fiskeslag utsatt før 1984: Other kinds of fish set out before '84					
	84				—		
	85				—		
	86	Andre fiskeslag utsatt i 1984. Other kinds of fish set out in '84		—			
	87			—			
	88			—			

Eiers/oppdretters navn: Owner/farmer's name:	Adresse: Address:	Telefon. Telephone:
Skjema utfylt av: Form completed by:	Adresse: Address:	Telefon. Telephone:

For firma. Dato og underskrift: For Firm. Date and Signature:	For Fiskeridirektoratet. Dato og underskrift: For Fishery Directorate. Date and Signature: